Taking Automotive Radar Chips Off-Road: Exploring the Potential of MMIC Radars for Earth and Planetary Science Applications – Ian S Adams

We investigated the suitability of commercially-available automotive radar chips for Earth and planetary science applications, in particular for sensing precipitation on Earth and Titan. Based on our calculations, the chips should work for Earth science, but the sensitivity of the evaluation board we used in the lab was poor due to a small, simple antenna. Sensing clouds in Titan will be more of a challenge, and more work is needed to understand the cloud properties for better characterization. We have identified external partners for the development of a system to make scientific quality measurements.

The purpose of the Goddard Space Flight Center's Internal Research and Development (IRAD) program is to support new technology development and to address scientific challenges. Each year, Principal Investigators (PIs) submit IRAD proposals and compete for funding for their development projects. Goddard's IRAD program supports eight Lines of Business: Astrophysics; Communications and Navigation; Cross-Cutting Technology and Capabilities; Earth Science; Heliophysics; Planetary Science; Science Small Satellites Technology; and Suborbital Platforms and Range Services.

Task progress is evaluated twice a year at the Mid-term IRAD review and the end of the year. When the funding period has ended, the PIs compete again for IRAD funding or seek new sources of development and research funding, or agree to external partnerships and collaborations. In some cases, when the development work has reached the appropriate Technology Readiness Level (TRL) level, the product is integrated into an actual NASA mission or used to support other government agencies. The technology may also be licensed out to the industry.

The completion of a project does not necessarily indicate that the development work has stopped. The work could potentially continue in the future as a follow-on IRAD; or be used in collaboration or partnership with Academia, Industry, and other Government Agencies.

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